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EXAMINER	
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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/798,698	LEVY ET AL.	
	Examiner	Art Unit	
	KEVIN S. MAI	2456	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-10,12-14,16-21 and 23-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-10,12-14,16-21 and 23-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action has been issued in response to Applicant's Request for Continued Examination filed September 4, 2008.

2. Claims 3, 11, 15 and 22 have been canceled. Claims 1, 7, 9, 10, 12, 18, 19 and 20 have been amended. Claims 1, 2, 4-10, 12-14, 16-21 and 23-27 have been examined and are pending.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 4, 2008 has been entered.

Response to Arguments

4. Applicant's arguments filed September 4, 2008 with respect to claims 1, 2, 4-10, 12-14, 16-21 and 23-27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

5. Claim 1 objected to because of the following informalities: Claim 1 does not end in a period. Appropriate correction is required.

6. Claims 4 and 23 are objected to because of the following informalities: Claims 4 and 23 are dependent on canceled claims. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 1 recites the limitation "the adaptors". There is insufficient antecedent basis for this limitation in the claim. The claim previously read 'a plurality of adaptors', however it was amended to recite 'the adaptors' and as such the term adaptors is not introduced prior to using the term 'the adaptors'. As such, 'the adaptors' lacks antecedent basis.

Claim Rejections - 35 USC § 103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 1, 2, 4-7, 9, 10, 12-14, 16, 18-21 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pub. No. 2005/0058063 to Masuyama et al. (hereinafter "Masuyama") and further in view of US Pat. No. 6381218 to McIntyre et al. (hereinafter "McIntyre").

12. **As to Claim 1,** Masuyama discloses **a method performed by an intermediate device driver executing in a server, comprising:**

managing transmission of data through the adaptors connected to switches (Figure 1 of Masuyama discloses a plurality of NID's connected to switches). Masuyama does not explicitly disclose**, wherein the intermediate device driver communicates with the adaptors through at least one adaptor device driver;**

Masuyama does not explicitly disclose **sending through the adaptors at least one query to the switches connected to the adaptor to determine a status of external ports in each queried switch communicating with a network** (Paragraph [0027] of Masuyama discloses the switch detecting link loss on the uplink and causing disruption to the downlink in order to trigger failover. Thus it is seen that Masuyama discloses detecting switch external port statuses and causing failover in response to such an event)**; and**

Masuyama does not explicitly disclose **in response to determining [from the at least one query] that no external ports are operational in one non-operational switch, indicating not to transmit data to the adaptor connected to the non-operational switch, wherein the adaptor for which indication is made not to transmit data is functioning and capable of transmitting** (Paragraph [0027] and Figure 2 of Masuyama disclose that when the switch detects link loss on the uplink (external port), the fail-over circuit automatically disrupts the communications on the downlink to trigger fail-over to another switch. Then paragraph [0026] discloses that when link loss on the downlink is discovered the system automatically fails-over from one NID to another NID. Thus it is seen that the original NID is still functioning and capable of transmitting since it is the switch that has detected link loss on the uplink)**; and**

Masuyama does not explicitly disclose **indicating to transmit data to one adaptor connected to one switch having at least one operational external port in response to determining [from the at least one query] that at least one external port in the switch is operation when the switch was previously indicated as non operational** (Paragraph [0037] of Masuyama discloses if the connection has been restored on the uplink (previously non-operational becoming operational) the downlink is also restored. This triggers the system to return to normal and allows the original NID to resume operation);

Masuyama does not explicitly disclose wherein the intermediate device driver communicates with the adaptors through at least one adaptor device driver.

However, McIntyre discloses this (Figure 3 and column 6 lines 43-50 of McIntyre disclose 4 NIC drivers supporting 4 NICs each connected to an intermediate driver)

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the failover system as disclosed by Masuyama, with utilizing drivers as disclosed by McIntyre. One of ordinary skill in the art would have been motivated to combine to use a known technique to implement a known system. Using drivers to perform failover is well known in the art as demonstrated in McIntyre.

Masuyama does not explicitly disclose sending through the adaptors at least one query to determine a status of ports.

However, McIntyre discloses this (Column 2 lines 1-20 disclose the intermediate driver instructing the secondary NIC to transmit a directed heartbeat packet to the primary NIC to determine the status)

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the failover system as disclosed by Masuyama, with detecting statuses with a query as disclosed by McIntyre. One of ordinary skill in the art would have been motivated to combine because it is seen as simple substitution of one known element for another. Masuyama and McIntyre implement different systems to detect port failure in order to cause failover, it is seen that it would be obvious to implement either system to detect the failure.

Masuyama does not explicitly disclose actions being done in response to the query.

However, McIntyre discloses this (Figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the failover system as disclosed by Masuyama, with performing failover in response a query as disclosed by McIntyre. One of ordinary skill in the art would have been motivated to combine because it is seen as simple substitution of one known element for another. Masuyama and McIntyre implement different systems to detect port failure in order to cause failover, it is seen that it would be obvious to implement either system to detect the failure.

13. **As to Claim 2,** Masuyama-McIntyre discloses the invention as claimed as described in claim 1**, further comprising:**

maintaining a switch map including information associating the adaptors with the switch to which the adaptors connect and a status of the external ports on the switches (Column 9 lines 50-55 of McIntyre disclose a status table that maintains the status of each of the ports including the NICs); **and**

updating the status of the external ports to the status determined from the at least one query (Column 10 lines 35-40 of McIntyre disclose updating the status table according to the heartbeat packets).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the method of claim 1 as disclosed by Masuyama-McIntyre, with maintaining a switch map and updating the switch map according to a query as disclosed by McIntyre. One of ordinary skill in the art would have been motivated to combine to be able to view the status of multiple ports.

14. **As to Claim 4**, Masuyama-McIntyre discloses the invention as claimed as described in claim 3, **further comprising:**

performing a failover to the switch that is operational from the switch that is non-operational in response to determining from the at least one query that one switch is non-operational (Paragraph [0027] and Figure 2 of Masuyama discloses when switch (40) detects link loss on the uplink, the fail-over automatically occurs to trigger fail-over to switch (44). Then figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat

packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)**; and**

performing a failback to the switch that is determined to have at least one operational external port when the switch was previously indicated as non-operational (Paragraph [0037] of Masuyama discloses that when the connection has been restored on the uplink switch (40) is returned to normal mode which similarly causes the original NID to resume operation. Then figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)**.**

Examiner recites the same rationale to combine used in claim 1.

15. **As to Claim 5,** Masuyama-McIntyre discloses the invention as claimed as described in claim 1**, wherein the adaptors are managed as a team and wherein load balancing operations are performed when transmitting data through the adaptors** (Paragraph [0023] of Masuyama discloses the NIDs can be configured into a team and may be used for purposes such as fail-over, redundancy and load balancing)**.**

16. **As to Claim 6,** Masuyama-McIntyre discloses the invention as claimed as described in claim 1**, wherein each adaptor is connected to a different switch to provide redundant paths**

to the network (Figure 1 of Masuyama shows two separate NIDs connected to two separate switches)**.**

17. **As to Claim 7,** Masuyama-McIntyre discloses the invention as claimed as described in claim 1, **wherein each switch and the server are implemented on different printed circuit boards** (Figure 1 of Masuyama discloses the server system 10 having separate servers and switches)**, and wherein the server and switch printed circuit board are in a chassis** (Paragraph [0015] of Masuyama discloses six server blades, two Ethernet modules and an embedded remote management module enclosed in a highly integrated 3U enclosure)**.**

18. **As to Claim 9,** Masuyama discloses **a system in communication with at least one switch, wherein the switch communicates with a network, comprising:**
a plurality of adaptors connected to the at least one switch (Paragraph [0023] and Figure 1 of Masuyama disclose NID (30a) and NID (30b) to be connected to switch (40) and switch (44) respectively. Then it discloses the other servers may be connected to switches (40 and 44) similarly. Thus it is seen that a plurality of adaptors are connected to each switch)**;**
Masuyama does not explicitly disclose **circuitry executing at least one adaptor device driver providing an interface to the adaptors and an intermediate device driver in communication with the adaptor device drivers, wherein the intermediate device driver causes operations, the operations comprising:**
managing transmission of data through the adaptors (Paragraph [0023] of Masuyama discloses the servers containing multiple NIDs for things like fail-over and load balancing. Both

of those actions require managing transmission of data through particular adaptors. Thus it is seen that the system manages the transmissions);

Masuyama does not explicitly disclose **sending through the adaptors at least one query to the switches connected to the adaptor to determine a status of external ports in each queried switch communicating with the network** (Paragraph [0027] of Masuyama discloses the switch detecting link loss on the uplink and causing disruption to the downlink in order to trigger failover. Thus it is seen that Masuyama discloses detecting switch external port statuses and causing failover in response to such an event);

Masuyama does not explicitly disclose **in response to determining [from the at least one query] that no external ports are operational in one non-operational switch, then indicating not to transmit data to the adaptor connected to the non-operational switch, wherein the adaptor for which indication is made not to transmit data is functioning and capable of transmitting** (Paragraph [0027] and Figure 2 of Masuyama disclose that when the switch detects link loss on the uplink (external port), the fail-over circuit automatically disrupts the communications on the downlink to trigger fail-over to another switch. Then paragraph [0026] discloses that when link loss on the downlink is discovered the system automatically fails-over from one NID to another NID. Thus it is seen that the original NID is still functioning and capable of transmitting since it is the switch that has detected link loss on the uplink); **and**

Masuyama does not explicitly disclose **indicating to transmit data to one adaptor connected to one switch having at least one operational external port in response to determining [from the at least one query] that at least one external port in the switch is operational when the switch was previously indicated as non-operational** (Paragraph [0037] of Masuyama discloses

if the connection has been restored on the uplink (previously non-operational becoming operational) the downlink is also restored. This triggers the system to return to normal and allows the original NID to resume operation).

Masuyama does not explicitly disclose circuitry executing at least one adaptor device driver providing an interface to the adaptors and an intermediate device driver in communication with the adaptor device drivers.

However, McIntyre discloses this (Figure 3 and column 6 lines 43-50 of McIntyre disclose 4 NIC drivers supporting 4 NICs each connected to an intermediate driver)

Examiner recites the same rationale to combine used in claim 1.

Masuyama does not explicitly disclose sending through the adaptors at least one query to determine a status of ports.

However, McIntyre discloses this (Column 2 lines 1-20 disclose the intermediate driver instructing the secondary NIC to transmit a directed heartbeat packet to the primary NIC to determine the status)

Examiner recites the same rationale to combine used in claim 1.

Masuyama does not explicitly disclose actions being done in response to the query.

However, McIntyre discloses this (Figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)

Examiner recites the same rationale to combine used in claim 1.

19. **As to Claim 10,** Masuyama-McIntyre discloses the invention as claimed as described in claim 9, **wherein the operations performed by the intermediate device driver further comprise:**

a switch map including information associating the adaptors with the switch to which the adaptors connect and a status of the external ports on the switches (Column 9 lines 50-55 of McIntyre disclose a status table that maintains the status of each of the ports including the NICs), **wherein the operations performed by the circuitry are further capable of updating the status of the external ports to the status determined from the at least one query** (Column 10 lines 35-40 of McIntyre disclose updating the status table according to the heartbeat packets).

Examiner recites the same rationale to combine used in claim 2.

20. **As to Claim 12,** Masuyama-McIntyre discloses the invention as claimed as described in claim 9, **wherein the operations performed by the intermediate device driver further comprise:**

performing a failover to the switch that is operational from the switch that is non-operational in response to determining from the at least one query that one switch is non-operational (Paragraph [0027] and Figure 2 of Masuyama discloses when switch (40) detects link loss on the uplink, the fail-over automatically occurs to trigger fail-over to switch (44). Then figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat

packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)**; and**

performing a failback to the switch that is determined to have at least one operational external port when the switch was previously indicated as non-operational (Paragraph [0037] of Masuyama discloses that when the connection has been restored on the uplink switch (40) is returned to normal mode which similarly causes the original NID to resume operation. Then figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)**.**

Examiner recites the same rationale to combine used in claim 1.

21. **As to Claim 13,** Masuyama-McIntyre discloses the invention as claimed as described in claim 9**, wherein the adaptors are managed as a team and wherein load balancing operations are performed when transmitting data through the adaptors** (Paragraph [0023] of Masuyama discloses the NIDs can be configured into a team and may be used for purposes such as fail-over, redundancy and load balancing)**.**

22. **As to Claim 14,** Masuyama-McIntyre discloses the invention as claimed as described in claim 9**, wherein each adaptor is connected to a different switch to provide redundant paths**

to the network (Figure 1 of Masuyama shows two separate NIDs connected to two separate switches)**.**

23. **As to Claim 16,** Masuyama-McIntyre discloses the invention as claimed as described in claim 9**, further comprising:**

a chassis, wherein the switches are implemented on printed circuit boards in the chassis (Paragraph [0015] of Masuyama discloses six server blades, two Ethernet modules and an embedded remote management module enclosed in a highly integrated 3U enclosure)**; and**

a printed circuit board in the chassis on which the circuitry and adaptors are implemented (Paragraph [0015] of Masuyama discloses six server blades, two Ethernet modules and an embedded remote management module enclosed in a highly integrated 3U enclosure)**.**

24. **As to Claim 18,** Masuyama discloses **a system in communication with a network, comprising:**

a chassis (Paragraph [0015] of Masuyama discloses six server blades, two Ethernet modules and an embedded remote management module enclosed in a highly integrated 3U enclosure)**;**

a plurality of switch printed circuit boards capable of being inserted in the chassis (Paragraph [0015] of Masuyama discloses six server blades, two Ethernet modules and an embedded remote management module enclosed in a highly integrated 3U enclosure)**;**

a server printed circuit board capable of being inserted in the chassis (Paragraph [0015] of Masuyama discloses six server blades, two Ethernet modules and an embedded remote management module enclosed in a highly integrated 3U enclosure)**, and including:**

a plurality of adaptors connected to the switch printed circuit boards (Paragraph [0023] and Figure 1 of Masuyama disclose NID (30a) and NID (30b) to be connected to switch (40) and switch (44) respectively. Then it discloses the other servers may be connected to switches (40 and 44) similarly. Thus it is seen that a plurality of adaptors are connected to each switch);

Masuyama does not explicitly disclose **circuitry executing at least one adaptor device driver providing an interface to the adaptors and an intermediate device driver in communication with the adaptor device drivers, wherein the intermediate device driver causes operations, the operations comprising:**

managing transmission of data through the adaptors (Paragraph [0023] of Masuyama discloses the servers containing multiple NIDs for things like fail-over and load balancing. Both of those actions require managing transmission of data through particular adaptors. Thus it is seen that the system manages the transmissions);

Masuyama does not explicitly disclose **sending through the adaptors at least one query to the switch printed circuit boards connected to the adaptor to determine a status of external ports in each queried switch communicating with the network** (Paragraph [0027] of Masuyama discloses the switch detecting link loss on the uplink and causing disruption to the downlink in order to trigger failover. Thus it is seen that Masuyama discloses detecting switch external port statuses and causing failover in response to such an event);

Masuyama does not explicitly disclose **in response to determining [from the at least one query] that no external ports are operational in one non-operational switch printed circuit board, then indicating not to transmit data to the adaptor connected to the non-operational switch printed circuit board, wherein the adaptor for which indication is made not to**

transmit data is functioning and capable of transmitting (Paragraph [0027] and Figure 2 of Masuyama disclose that when the switch detects link loss on the uplink (external port), the fail-over circuit automatically disrupts the communications on the downlink to trigger fail-over to another switch. Then paragraph [0026] discloses that when link loss on the downlink is discovered the system automatically fails-over from one NID to another NID. Thus it is seen that the original NID is still functioning and capable of transmitting since it is the switch that has detected link loss on the uplink);

Masuyama does not explicitly disclose **indicating to transmit data to one adaptor connected to one switch having at least one operational external port in response to determining [from the at least one query] that at least one external port in the switch is operational when the switch was previously indicated as non-operational** (Paragraph [0037] of Masuyama discloses if the connection has been restored on the uplink (previously non-operational becoming operational) the downlink is also restored. This triggers the system to return to normal and allows the original NID to resume operation).

Masuyama does not explicitly disclose circuitry executing at least one adaptor device driver providing an interface to the adaptors and an intermediate device driver in communication with the adaptor device drivers.

However, McIntyre discloses this (Figure 3 and column 6 lines 43-50 of McIntyre disclose 4 NIC drivers supporting 4 NICs each connected to an intermediate driver)

Examiner recites the same rationale to combine used in claim 1.

Masuyama does not explicitly disclose sending through the adaptors at least one query to determine a status of ports.

However, McIntyre discloses this (Column 2 lines 1-20 disclose the intermediate driver instructing the secondary NIC to transmit a directed heartbeat packet to the primary NIC to determine the status)

Examiner recites the same rationale to combine used in claim 1.

Masuyama does not explicitly disclose actions being done in response to the query.

However, McIntyre discloses this (Figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)

Examiner recites the same rationale to combine used in claim 1.

25. **As to Claim 19,** Masuyama-McIntyre discloses the invention as claimed as described in claim 18**, wherein the server printed circuit board further includes:**
a switch map including information associating the adaptors with the switch to which the adaptors connect and a status of the external ports on the switches (Column 9 lines 50-55 of McIntyre disclose a status table that maintains the status of each of the ports including the NICs)**, wherein the intermediate device driver operations update the status of the external ports to the status determined from the at least one query** (Column 10 lines 35-40 of McIntyre disclose the intermediate driver updating the status table according to the heartbeat packets)**.**

Examiner recites the same rationale to combine used in claim 2.

26. **As to Claim 20,** Masuyama discloses **an article of manufacture comprising a computer readable storage medium having an intermediate device driver executed to communicate with adaptor device drivers providing an interface to adaptors connected to switches, wherein the switches provide communication with a network, and wherein the intermediate device driver is further executed to perform operations, the operations, comprising:**

managing transmission of data through the adaptors connected to the switches (Paragraph [0023] of Masuyama discloses the servers containing multiple NIDs for things like fail-over and load balancing. Both of those actions require managing transmission of data through particular adaptors. Thus it is seen that the system manages the transmissions)**;**

Masuyama does not explicitly disclose **sending through the adaptors at least one query to the switches connected to the adaptor to determine a status of external ports in each queried switch communicating with the network** (Paragraph [0027] of Masuyama discloses the switch detecting link loss on the uplink and causing disruption to the downlink in order to trigger failover. Thus it is seen that Masuyama discloses detecting switch external port statuses and causing failover in response to such an event)**; and**

Masuyama does not explicitly disclose **in response to determining [from the at least one query] that no external ports are operational in one non-operational switch, then indicating not to transmit data to the adaptor connected to the non-operational switch** (Paragraph [0027] and Figure 2 of Masuyama disclose that when the switch detects link loss on the uplink (external port), the fail-over circuit automatically disrupts the communications on the downlink to trigger fail-over to another switch. Then paragraph [0026] discloses that when link loss on the

downlink is discovered the system automatically fails-over from one NID to another NID. Thus it is seen that the original NID is still functioning and capable of transmitting since it is the switch that has detected link loss on the uplink).

Masuyama does not explicitly disclose sending through the adaptors at least one query to determine a status of ports.

However, McIntyre discloses this (Column 2 lines 1-20 disclose the intermediate driver instructing the secondary NIC to transmit a directed heartbeat packet to the primary NIC to determine the status)

Examiner recites the same rationale to combine used in claim 1.

Masuyama does not explicitly disclose actions being done in response to the query.

However, McIntyre discloses this (Figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)

Examiner recites the same rationale to combine used in claim 1.

27. **As to Claim 21,** Masuyama-McIntyre discloses the invention as claimed as described in claim 20, **wherein the operations further comprise:**

maintaining a switch map including information associating the adaptors with the switch to which the adaptors connect and a status of the external ports on the switches (Column 9

lines 50-55 of McIntyre disclose a status table that maintains the status of each of the ports including the NICs)**; and**

updating the status of the external ports to the status determined from the at least one query (Column 10 lines 35-40 of McIntyre disclose updating the status table according to the heartbeat packets)**.**

Examiner recites the same rationale to combine used in claim 2.

28. **As to Claim 23,** Masuyama-McIntyre discloses the invention as claimed as described in claim 22**, wherein the operations further comprise:**

performing a failover to the switch that is operational from the switch that is non-operational in response to determining from the at least one query that one switch is non-operational (Paragraph [0027] and Figure 2 of Masuyama discloses when switch (40) detects link loss on the uplink, the fail-over automatically occurs to trigger fail-over to switch (44). Then figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports)**; and**

performing a failback to the switch that is determined to have at least one operational external port when the switch was previously indicated as non-operational (Paragraph [0037] of Masuyama discloses that when the connection has been restored on the uplink switch (40) is returned to normal mode which similarly causes the original NID to resume operation.

Then figure 8 and column 13 lines 35-67 of McIntyre disclose if the intermediate drive detects failure of the primary port, the intermediate driver sends commands to the NIC drivers to cause failover to occur. It is further explained that the status of the ports was detected via a heartbeat packet which is seen to be a query. Column 2 lines 1-20 disclose how the intermediate driver sends these directed heartbeat packets to test the ports).

Examiner recites the same rationale to combine used in claim 1.

29. **As to Claim 24,** Masuyama-McIntyre discloses the invention as claimed as described in claim 20, **wherein the adaptors are managed as a team and wherein load balancing operations are performed when transmitting data through the adaptors** (Paragraph [0023] of Masuyama discloses the NIDs can be configured into a team and may be used for purposes such as fail-over, redundancy and load balancing).

30. **As to Claim 25,** Masuyama-McIntyre discloses the invention as claimed as described in claim 20, **wherein each adaptor is connected to a different switch to provide redundant paths to the network** (Figure 1 of Masuyama shows two separate NIDs connected to two separate switches).

31. **As to Claim 26,** Masuyama-McIntyre discloses the invention as claimed as described in claim 20, **wherein the operations are performed by an intermediate device driver in communication with adaptor device drivers** (Figure 3 and column 6 lines 43-50 of McIntyre disclose 4 NIC drivers supporting 4 NICs each connected to an intermediate driver).

Examiner recites the same rationale to combine used in claim 1.

32. Claims 8, 17 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuyama-McIntyre and further in view of US Pub. No. 2002/0004912 A1 to Fung (hereinafter "Fung").

33. **As to Claim 8,** Masuyama-McIntyre discloses the invention as claimed as described in claim 1. Masuyama-McIntyre does not explicitly disclose **wherein the at least one query comprises an SNMP query of the external port link status.**

However, Fung discloses this (Paragraph [0141] of Fung discloses a system where SNMP message are utilized for status reporting of switches)

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the method of claim 1 as disclosed by Masuyama-McIntyre, with using SNMP messages as disclosed by Fung. One of ordinary skill in the art would have been motivated to combine because it is disclose that using SNMP for switch management is a known industry standard (paragraph [0141] of Fung).

34. **As to Claim 17,** Masuyama-McIntyre discloses the invention as claimed as described in claim 9. Masuyama-McIntyre does not explicitly disclose **wherein the at least one query comprises an SNMP query of the external port link status.**

However, Fung discloses this (Paragraph [0141] of Fung discloses a system where SNMP message are utilized for status reporting of switches)

Examiner recites the same rationale to combine used in claim 8.

35. **As to Claim 27,** Masuyama-McIntyre discloses the invention as claimed as described in claim 20. Masuyama-McIntyre does not explicitly disclose **wherein the at least one query comprises an SNMP query of the external port link status.**

However, Fung discloses this (Paragraph [0141] of Fung discloses a system where SNMP message are utilized for status reporting of switches)

Examiner recites the same rationale to combine used in claim 8.

Conclusion

36. A shortened statutory period for reply to this Office action is set to expire THREE MONTHS from the mailing date of this action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN S. MAI whose telephone number is (571)270-5001. The examiner can normally be reached on Monday through Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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KSM

/Bunjob Jaroenchonwanit/
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